

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of packing and unpacking a column chamber, comprising the steps of:
flowing a mixture of a matrix material and fluid into a column chamber having a rod in a first position and forming a packed column from the matrix material, said column chamber having a first port for receiving said mixture, ~~and~~ an outlet port and an actuator port wherein said actuator port is provided as having a said rod having a binary end placed within said actuator port wherein said binary end of said rod blocks the flow of said matrix material to said outlet port in a said first position, permits the flow of said matrix material to said outlet port in a second position, and maintains contact with said fluid flow and allows the flow of said fluid through said outlet port in all positions;
capturing said matrix material and permitting said fluid to flow therepast by positioning said binary end of said rod in said first position; and opening said outlet by positioning said binary end of said rod in said second position, thereby permitting said matrix material and said fluid to flow through said outlet port thereby unpacking the matrix material from the column chamber.
2. (original) The method of claim 1 wherein the unpacking removes substantially all of the matrix material from the column chamber.

3. (original) The method of claim 2 wherein all of the matrix material is removed from the column chamber.

4. (original) The method of claim 1 wherein a first fluid is flowed into the column chamber during packing and a second fluid is flowed into the column chamber during unpacking, the second fluid being different from the first fluid.

5. (currently amended) A method of forming a packed column comprising: providing a column chamber, the column chamber having an inlet end and an outlet end, the outlet end having an actuator port and a flow port, the flow port alternately open or partially obstructed by a binary end of a rod placed in the actuator port wherein said binary end of said rod blocks the flow of a matrix material in a first position, permits the flow of said matrix material in a second position, and maintains contact with said fluid flow and allows the flow of a fluid in all positions; and flowing a mixture of a first fluid and a matrix material into the column chamber through the inlet end with said rod in said first position ~~for thereby~~ packing the matrix material within the column chamber.

6. (original) The method of claim 5 further comprising, after packing the matrix material in the column chamber, opening the flow port by a rotation of either of the rod or the column chamber with respect to the other and flowing a second fluid through the column chamber thereby unpacking the matrix material from the column chamber.

7. (original) The method of claim 6 wherein the first fluid and the second fluid are the same.

8. (currently amended) A method for purifying a component of a sample comprising:
providing a column chamber, the column chamber having an inlet end and an outlet end, the outlet end having an actuator port and a flow port, the flow port alternately open or partially obstructed about a binary end of a rod placed in the actuator port wherein said binary end of said rod blocks the flow of a matrix material in a first position, permits the flow of said matrix material in a second position, and maintains contact with said fluid flow and allows the flow of a fluid in all positions;
flowing a first fluid and a matrix material into the column chamber through the inlet end and along a first flow path with said rod in said first position to form a packed column of the matrix material within the column chamber, the rod holding the matrix material and permitting flow of the first fluid therethrough, the matrix material being configured to selectively retain a component of the sample;
flowing the sample through the packed column for separating the component from the rest of the sample;
unobstructing the flow port by rotating said rod to said second position; and
flowing a second fluid through the column to remove the matrix material from the column chamber.
9. (original) The method of claim 8 wherein said sample is a chemical sample.
10. (original) The method of claim 8 wherein the sample is a biological sample.
11. (original) The method as recited in claim 10, wherein said biological sample has the component of a nucleic acid.
12. (original) The method as recited in claim 10, wherein said biological sample has the component of a protein.
13. (original) The method of claim 11 wherein the nucleic acid comprises at least one of DNA or RNA.

14. (original) The method of claim 8 further comprising eluting the component from the packed column before removing the matrix material from the column chamber.

15. (original) The method of claim 8 further comprising eluting the component from the matrix material after removing the matrix material from the column chamber.

16. (original) The method of claim 8 further comprising recirculating at least some portions of the sample through the packed column prior to removing the matrix material from the column chamber.

17. (currently amended) A method for purifying a biological sample comprising:
providing a column chamber, the column chamber having an inlet end and an outlet end, the outlet end having an actuator port and a flow port, the flow port partially obstructed with a rod with a binary end wherein said binary end of said rod blocks the flow of a matrix material in a first position, permits the flow of said matrix material in a second position, and maintains contact with said fluid flow and allows the flow of a fluid in all positions;
flowing a mixture of a first fluid and a matrix material into the column chamber with said rod in said first position to form a packed column of the matrix material within the column chamber, the matrix material being configured to selectively retain a biological sample;
flowing a sample containing the biological sample through the packed column to separate the biological sample from other components of the sample; rotating said rod to said second position; and flowing a second fluid through the column chamber to remove the matrix material from the column chamber.

18 (withdrawn) A column-based separations system, comprising:

a column chamber having an inlet and an outlet, said outlet in fluid

communication with a first flow path alternately obstructed and opened by a rod with a binary end.

19 (withdrawn) The system of claim 18, further comprising a column matrix material retained in said column chamber by said rod.

20 (withdrawn) The system of claim 18, further comprising a heater in thermal contact with said column chamber.